Catalogue no. 11-626-X — No. 065
ISSN 1927-503X
ISBN 978-0-660-06944-9

Economic Insights

A Historical Perspective on Recent Movements in Canada's Purchasing Power Parity

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Release date: December 22, 2016

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... not applicable
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0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
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^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
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F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

Published by authority of the Minister responsible for Statistics Canada

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A Historical Perspective on Recent Movements in Canada's Purchasing Power Parity

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This *Economic Insights* article presents quarterly estimates from Statistics Canada for the U.S.–Canada purchasing power parity. Similar to earlier articles that examined differences in price levels between Canada and the United States, this short article shows that the relative price level between Canada and the United States does not adjust as much as the exchange rate in the short-run, but that over longer periods of time they move similarly.

Introduction

The U.S.–Canada purchasing power parity (PPP) is a measure of the relative price level between Canada and the United States. It measures the difference, in dollars, that exists between the two countries for an individual or firm wishing to purchase an equivalent basket of goods and services in each country. In the third quarter (Q3) of 2016, the U.S.–Canada PPP was US$0.84, meaning that for every dollar Canadians spent on goods and services, Americans spent 84 cents to buy comparable items.

The PPP is often interpreted as an equilibrium, or a long-run, exchange rate.[1] But, rather than being based on the prices paid in exchange-rate markets, it is calculated by aggregating the prices paid for traded and non-traded goods and services.[2] PPPs are not subject to the same short-run effects as market exchange rates, and the presence of non-traded goods and services means that not all goods and services used in the construction of PPPs are subject to arbitrage forces.[3] Nevertheless, they are viewed as more suitable for assessing the relative price level between two nations at a given point in time than market exchange rates due to their relative stability. Consequently, PPPs are primarily used to convert national price levels when making international comparisons. They move similarly to exchange rates over long periods of time, but do not exhibit the same short-run volatility.

Chart 1
Purchasing power parity versus exchange rate, quarterly, 1970 Q1 to 2016 Q3

Note: PPP refers to purchasing power parity. Q refers to quarter.
Source: Statistics Canada, authors' calculations and CANSIM table 176-0064.

1. See, for example, Taylor and Taylor (2004).
2. Baldwin and Macdonald (2009).
3. Lafrance and Schembri (2002) and Macdonald (2009).

Long-run movements in purchasing power parity and the exchange rate

Since the early 1970s, when Canada and the United States introduced floating exchange rates, the U.S.–Canada PPP and the U.S.–Canada exchange rate have moved in a broadly similar direction, but the market exchange rate exhibited more variation (Chart 1). The PPP and the exchange rate experienced a long decline or depreciation during the 1970s and 1980s. The PPP was stable in the 1990s, as the Canadian dollar continued to depreciate. In the 2000s, the PPP rose while the Canadian dollar appreciated, and both showed downward adjustments around the onset of the global economic recession. After the recession, the Canadian dollar subsequently appreciated, only to depreciate sharply beginning around 2013. The PPP, however, was stable until 2014 and declined modestly thereafter.

The larger fluctuations in the exchange rate over the last 40 years means that the two conversion rates were equal in the middle of the 1970s, in the early 1990s and at several points since 2000. However, in the intervening periods, the exchange rate often differed significantly from the PPP as it responded to short-run phenomena such as interest rate changes, or to changes in commodity prices that had stronger effects on currency markets than on domestic price levels.

Chart 2
Goods and services purchasing power parities versus exchange rate, quarterly, 1970 Q1 to 2016 Q3

Note: PPP refers to purchasing power parity. Q refers to quarter.
Source: Statistics Canada, authors' calculations and CANSIM table 176-0064.

Recent movements in relative prices

Over the resource cycle of the last 15 years, the exchange rate reached a low of US$0.63 in 2002 Q1, after which the Canadian dollar began a multi-year appreciation. In 2007 Q4, the U.S.–Canada exchange rate averaged US$1.02, and, following a rapid depreciation and appreciation brought about by global economic recession and recovery dynamics, the value of the Canadian dollar recovered to an average of US$1.03 in 2011 Q2. The value of the dollar began to decline in 2011 Q2, slowly at first, then rapidly after 2012 Q4. By 2016 Q3, the U.S.–Canada exchange rate had returned to US$0.77, a level similar to that in 2004.

The PPP also increased between 2002 and 2007, with the most rapid gains occurring between 2002 Q4 and 2006 Q1. The U.S.–Canada PPP remained roughly stable around 2006 Q1 levels until the onset of the global recession in 2007 Q4. Between 2007 Q4 and 2009 Q1, the U.S.–Canada PPP declined from US$0.866 per Canadian dollar to US$0.846 per Canadian dollar. Despite a rebound in the market exchange rate, the PPP remained stable at around US$0.848 until 2014. During this period, the market exchange rate was greater than US$1.00 per Canadian dollar in a number of quarters. Finally, beginning in 2014 Q2 through to 2016 Q1, the U.S.–Canada PPP declined. This coincided with part, but not all, of the period during which the Canadian dollar depreciated. As of 2016 Q3, similar to the exchange rate, the PPP had returned to a level similar to that in 2004.

Goods prices versus services prices

The PPP is calculated using a wide variety of prices for consumption and investment goods and services. It aggregates many different prices to measure differences in the overall relative price level. In general, one would expect that for more easily traded items, such as cars or fruit, the price in Canada would be broadly equal to the price in the United States multiplied by the market exchange rate. This hypothesis is known as the law of one price, and it is one theory for how prices in Canada should relate to those in the United States.

In practice, the law of one price rarely holds. Differences in market structure, the presence of trade barriers and transport costs all lead to situations where the law of one price fails.[4] Moreover, Canadians and Americans purchase thousands of items, not all of which are traded. For these types of goods or services, it is not clear that the law of one price would, or should, apply.

4. For a more complete discussion of why the law of one price may not hold, see the report of the Standing Senate Committee on National Finance (Canada 2013).

Since PPPs are composed of many types of products, they can be disaggregated into particular groups to provide a sense of the potential importance of different product types for understanding movements in the overall PPP. One such disaggregation splits products into goods and services. Broadly speaking, the items that are most likely to be subject to the law of one price are goods, and the items that are most likely to be immune to this law are services.

When the U.S.–Canada PPP for goods is compared with the U.S.–Canada PPP for services, the former exhibits a stronger, albeit imperfect, correlation with the nominal exchange rate (Chart 2).

Since the 1970s, the U.S.–Canada PPP for goods has followed a pattern similar to that of the exchange rate, but with significantly less variation. The long depreciation of the exchange rate between the early 1970s and 2002 had a corresponding decline in the goods PPP. In the period after 2002, while both followed similar broad movements, the U.S.–Canada PPP for goods was far less volatile than the market exchange rate.

Prices for services, on the other hand, have a PPP that follows a distinctly different pattern altogether. The services PPP declined during the 1970s and early 1980s, but then began increasing while the exchange rate depreciated. After 2002, the services PPP rose as the exchange rate appreciated, but then entered a period of decline that lasted until 2011 and that did not accord with exchange rate changes. Finally, over the last three years, the services PPP tended to increase while the exchange rate depreciated.

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